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AUTHOR Ternent, William A.
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ABSTRACT

The written simulation is a useful form of instruction in subject matter requiring problem solving and decision making and is also useful for evaluation of learner outcomes in areas where what is learned can best be measured by its use in problem solving and decision making. A number of criteria which stressed the perceived need for greater flexibility, reality, and comparative studies were suggested for evaluating the potential of the written simulation for decision-making research. The written simulation was then viewed in terms of this context. While written simulations have potential for studies in the field of decision making, there are two serious shortcomings: simulations with realistic content are still artificial, and written simulations are limited by the ability, sensitivity, and creativity of the writer. (Author/RB)

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WRITTEN SIMULATIONS FOR RESEARCH

William A. Ternent*

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FOREWORD

The written simulation--as discussed in this seminar[1]--has especial relevance to those concerned with teaching and evaluation of learner performance. It is applicable in learning situations stressing either decision making itself or subjects where what is learned becomes most evident when observing how it is applied in a problem solving or decision making context.

The use--if any--of written simulations of the nature discussed here as a research strategy or methodology in decision making is well disguised in the literature. However, the method seems laden with potential for D-M studies, and this brief prospectus is designed to investigate some of those potentials.

In presenting that which follows, I hasten to assert that the suggestions offered have not been subjected to the "heat" of implementation. These remarks, then, should be received, inspected, challenged, and improved upon as should any suggestions which are offered and defended as only a few notches above gross speculation.

In short, what follows should <u>not</u> be taken as an explication of developed and proved approaches. Rather, you are invited to speculate about potential applications and research strategies using written simulation which have particular relevance to your interests as well as criticize those offered.

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[1]This discussion is offered as one portion of a seminar where James A. Bobula, Ph.D., has presented a companion piece on written simulations as developed and used at the University of Illinois, College of Medicine, Chicago, Illinois. Seminar prepared for presentation at 1974 annual meeting of the International Communication Assn.

*Associate Director, West Virginia Regional Medical Program;
Lecturer, Speech-Communication Dept., West Virginia University.
Author received his Ph.D. in Communication from the Ohio State University in 1972.

CS 500 765

A CONTEXT FOR DISCUSSING WRITTEN SIMULATIONS AS A STRATEGY OR METHODOLOGY IN DECISION MAKING RESEARCH

Decision making is a real, recognizable, recurring aspect of human activity. It is not merely an intellectualized notion. Yet, the activity itself may involve intellectualization, and the activity itself has been broadly intellectualized as theory, models and paradigms. This discussion is not concerned with intellectualizing to produce theories, models or paradigms; however it is concerned with potential approaches toward investigating theories, models and paradigms of decision making.

Beyond this lack of interest in promoting any one or several notions about how decisions are made this discussion is very much interested in the idea of concurrent investigation of the use of such various notions in differing contexts, and is, moreover, also very much interested in the potential of inserting into decision making studies the potential for "real time" adaptive processes as may be employed by subjects in real life. That is to say, I find far too much of the literature playing single focus decision making games that do not seem to have much to do with real decision making by people. Too, I find too little hint in the literature of research which permits subjects to change their decision making approaches in the middle of the game. Yet, a bit of introspection and observation leads me to the conclusion that a good bit of such adaptation takes place in human affairs.

There is yet another context for this discussion: an interest in developing studies in decision making which bear some resemblance to possible, practical life situations. Here again, I find the literature far too far removed from reality in dealing with reality matters. It is my hope that we can find in written simulations--or elsewhere if necessary--a closer approximation of decision making in life.

Thus, the following discussion on the usefulness of written simulations in D-M studies hinges on these basic criteria:

1) That the approach lend itself to the study of any decision theory or model or paradigm one might wish to investigate.

2) That the approach enable the investigation of a variety of approaches at the same time.

3) That the approach enable the building of study protocols which permit adaptive processes in decision making for the subjects involved.

4) That the approach lend itself to the construction of decision making studies which resemble life situations and contexts as closely as possible.

Incidentally, these criteria might be equally useful for considering the merits of any approach to studies in decision making.

REVIEWING WRITTEN SIMULATIONS AGAINST THE CRITERIA

Usefulness for Study of Any Decision System--There are a number of different explanations of decision making. They range from utility based models which rest on the concept of an economic man who is well informed and operates rationally to maximize outcomes--to--theories of "risky" choices which deal with notions of the probability of outcomes and the uncertainty of outcomes but still assume utility maximization--to--a variety of psychologically based models. Some theories or models deal with notions of randomness of choices based upon observations of individuals not making predictable repeated choices in similar situations. Still other notions involve concepts of transitivity or intransitivity among three or more choices. And, some paradigms of decision making rest on abductive logic approaches as opposed to rational deductive underpinnings.

The point is that decision making views have arisen from a wide variety of fields or disciplines (economics, statistics, business, politics, medicine, law, psychology) and many of the notions promoted have conflicting bases. To be effective in dealing with any or all of them--particularly in combination, as called for by criterion two--a decision making study approach should be unbiased in its very nature.

Written simulations seem to be capable of meeting this criterion. There is nothing in the approach which necessarily makes it more kind to one decision system than another. It is merely a structural methodology which is system-analytic in nature and thus open to virtually any possibility. It is neither content nor single system bound. However, it should be recognized that written simulations may be biased by the writer of the simulation. For instance, should the writer carry to the preparation of the simulation a strong predisposition toward the "correctness" of a specific approach (say a utility or rational system), it is quite likely that the decision options available will favor that approach.

Usefulness for Concurrent Investigation of Decision Approaches--Studies in decision making are often bound to the investigation of human interaction with one decision process. That is, a study may investigate a utility decision system or a psychologically based decision system, but rarely both at the same time in the same study. Granting that individual investigations have their merits, it is quite possible that decision research could benefit most from studies which offer the subjects who are participating in them the opportunity to select from among two or more possible decision approaches.

Written simulations are capable of meeting this criterion. The only restriction on the number of decision tracks which might be chosen by a subject in a written simulation is the number of tracks written into it. Thus, the limitation is one of the researcher (his knowledge of and sensitivity to the potential use by his subjects of various decision approaches) and not of the technique. Again, however, recognition should be given the possibilities of biasing in the preparation of the simulation: an option which is prepared in a manner which makes it seem foolish in relation with other options may not be perceived as an option at all.

Usefulness in Permitting Adaptive Processes in Decision Studies--The literature of decision making yields the observation that human decision behavior varies: that faced with successive identical decision situations a person may not make the same choice among alternatives. Introspection and observation might also lead us to suggest that an individual may alter his or her approach to making a decision during decision making activity. For instance, encountering perceived inadequacy of an approach or options which occur, one is likely to switch to an altered decision system.

This possibility is easily offered in the written simulation. At every branch in the decision process represented by the simulation there is the potential of offering radically different approaches. Indeed, the approaches may be totally new ones or those which have been previously encountered and rejected in the simulation. Again, the only restriction to such adaptive possibilities in the simulation is the one of the researcher: was his knowledge of and sensitivity to the potential variations which his subjects might employ sufficient enough to assure inclusion.

This capability for building adaptive processes into study instruments offers an opportunity to quite directly investigate a wide range of questions about the differential application of various decision systems in varying contexts. This capability for adaptive processes is also important in relating to criterion number four.

Usefulness in Constructing Realistic Decision Situations for Research--Not every study need be rooted in so-called "real life" situations, but one gets the impression that decision making research could profit from more such studies.

The written simulation seems to offer this possibility. The very nature of the problem context upon which the written simulation is constructed permits the author to be quite realistic. Moreover, aside from dealing solely with the "facts" relevant to the situation, the author can weave value laden aspects or virtually any psychological variable desired into the simulation. Consequently, decision behavior in various psychological contexts may be more carefully observed and attributed.

APPLICATIONS FOR WRITTEN SIMULATIONS

Some possible suggestions for application of written simulations are inherent in the preceeding review, but a more specific statement of some applications is desirable:

1. Investigation of the application of specific decision systems.
2. Study of content-specific decision situations.
3. Inspection and analysis of specific decision processes.
4. Study of the adoption of alternative decision systems within a decision situation.

5. Investigation of inhibiting factors in the application of decision processes.

6. Study of psychological variables in decision making.

In such applications, the ability to track the discrete steps taken by a subject in dealing with the simulated situation offers intriguing advantage over approaches used in many D-M studies. And, perhaps most intriguing is the potential for the collection of sufficient data over time to construct a different kind of "probability" base which is more useful in human choice situations than those probability bases currently used which are expressions of chance.

SOME LIMITATIONS OF WRITTEN SIMULATIONS

Written simulations are not without their limitations. Some which seem important--aside from the very basic questions of reliability and validity--are:

1. The "paper and pencil" nature of the simulation. While potentially offering an opportunity to present controlled but highly realistic content, the situation is, after all, an artificial situation. As such it is subject to the limitations of such instruments.

2. The written simulation is limited by the ability, sensitivity and creativity of the writer.

SUMMARY

The written simulation is a useful form of instruction in subject matter requiring problem solving and decision making. It is also very useful for evaluation of learner outcomes in areas where what is learned can best be measured by its use in problem solving and decision making. This discussion suggests that it may be just as useful for meaningful and sensitive studies in decision making.

A number of criteria were suggested for viewing the potential of the written simulation for decision making research which stressed the author's perceived need for greater flexibility, reality and comparative studies in the field. The written simulation was then viewed in these contexts. The outcome of this review leads to the conclusion that written simulations have much potential for studies in the field of decision making.

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